



PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 71146-49318P	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US01/00349	International filing date (day/month/year) 01 JANUARY 2001	(Earliest) Priority Date (day/month/year) 07 JANUARY 2000
Applicant ATHANAS, LEWIS		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.
2. ☐ Certain claims were found unsearchable (See Box I).
3. ☐ Unity of invention is lacking (See Box II).
4. With regard to the title,
- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:
5. With regard to the abstract,
- ☐ the text is approved as submitted by the applicant.
- ☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the drawings to be published with the abstract is Figure No. 3
- ☒ as suggested by the applicant.
- ☐ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.
- ☐ None of the figures.

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

ABSTRACT OF THE DISCLOSURE

A mechanical-to-acoustical transducer (10) has at least one actuator (12), preferably a piezo motor, that is coupled, generally perpendicularly, to one edge of a diaphragm (14) formed from a thin, flexible sheet material. The diaphragm (14) is fixed at a point spaced from the actuator (12) in the direction of its motion so that excursion of the actuator (12) is translated into a corresponding, mechanically-amplified, excursion of the diaphragm (14) -- typically amplified five to seven times. The diaphragm (14) is curved, preferably parabolically, and to a small degree. The diaphragm (14), if optically clear, can be mounted on a frame (50) over a video display screen to provide a screen speaker. The actuators (12) are secured at one end to the frame (50) and at a free, movable end, to an edge of the diaphragm (14), generally at right angles. A gasket (35'') seals the edges of the diaphragm (14) to maintain an acoustic pressure gradient across the diaphragm (14).

INTERNATIONAL SEARCH REPORT

 International application No.
PCT/US01/00349
A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : HO2N 2/00

US CL : 310/311, 324, 317, 328

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 310/311, 324, 317, 328

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EAST

search terms: piezo\$, actuator, diaphragm, sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,867,302 A (Fleming) 02 February 1999, (02/02/1999), figures 1, 3j	1, 3, 4, 6, 9, 10, 11
Y	US 5,608,282 A (Wilber et al.) 04 March 1997 (04/03/1997) figure 6	1, 3, 4, 6, 9, 10, 11
A	US 5,767,612 A (Takeuchi et al.) 16 June 1998 (16/06/1998) figures 3-7	1-14

☐ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

27 MARCH 2001

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